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DANG, IAN D

ART UNIT	PAPER NUMBER
1647	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,745	LANG ET AL.	
	Examiner	Art Unit	
	IAN DANG	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *53,55,56,59,60,62 and 65-108* is/are pending in the application.

4a) Of the above claim(s) *65-104* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *53,55,56,59,60,62 and 105-108* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application, Amendments and/or Claims

The amendment of 11 February 2008 has been entered in full. Claims 1-52, 54, 57, 58, 61, 63, and 64 have been cancelled and claims 53, 55, 56, 59, 60, and 62 have been amended. Claims 105-108 have been added.

This application contains claims 65-104 drawn to an invention nonelected with traverse in the reply filed on 06/18/2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claims 53, 55, 56, 59, 60, 62, 105-108 are under examination.

Claim Objections

Claims 53, 55, 56, 59, 60, and 62 are objected to because of the following informalities:

Claims 53, 55, 56, 59, 60, and 62 are objected to because these claims use acronyms without first defining what they represent in the independent claims (see for example “Sgk1”). While the claims can reference acronyms, the material presented by the acronym must be clearly set forth at the first use of the acronym.

Appropriate correction is required.

Rejection withdrawn

35 USC § 101

Applicant’s response and amendments made to claims 53, 55, 59, 60, 62 filed on 02/11/2008 have overcome the rejection of claims 53-56 and 59-64 under 35 USC 101. In view of the amendments made by Applicants, the rejection of claims 53-56 and 59-64 under 35 USC 101 has been withdrawn in favor of a rejection under 35 USC 112, Second paragraph.

Rejections Maintained

35 USC § 112 (Second paragraph)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 53, 55-56, 59-60, and 62 remain rejected under 35 U.S.C. 112, second paragraph and the newly added claims 105-108 are also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The rejection is maintained for the reasons already of record on page 5 of the office action mailed 08/16/2007.

Although Applicants have amended claim 53 from "disturbed glucose transport" to "obesity", the issue regarding the rejection under 35 U.S.C. 112, second paragraph, still remains. There is still no step in the body of claim 53 indicating that the diagnosis of obesity has taken place. Claim 53 remains indefinite because claim 53 has a step that does not clearly relate back to the preamble.

Claim Rejections - 35 USC § 112 (Written Description)

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 53, 55-56, 59-60, and 62 remain rejected under 35 U.S.C. 112, First paragraph and the newly added claims 105-108 are also rejected under 35 U.S.C. 112, First paragraph, as failing to comply with the written description requirement in view the amendments filed

02/11/2008. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

(i). At page 10 of the response, Applicants argue that the instant disclosure and the reference publications cited therein establish that sgk1 polypeptides and polynucleotides have been well- characterized in the art. The specification provides a detailed disclosure on the mode of action (for example, kinase activity) as well as cellular targets of the sgk1 polypeptide of the instant invention. The instant application additionally characterizes a role of sgk1 polypeptide in the regulation of sglt1 activity and discloses the molecular pharmacology of sglt1 modulation and its effects on glucose homeostasis. In addition, Applicants argue that the specification generically teaches that sgk1 activity is implicated with a wide variety of metabolic disorders, in particular, obesity. The specification further teaches that mutations in the sgk1 polypeptides have direct consequences in sglt1 activity.

Applicant's arguments have been fully considered but are not found persuasive. Although the specification provides structural characteristics regarding Sgk1, Applicants have not provided any biological activities for Sgk1 associated with metabolic disorders including obesity. For instance, the specification teaches that sgk1 regulates the activity of sglt1, but it does not provided any functional characteristics for sgk1, so that one of skill can identify it with obesity. The disclosure that the sodium glucose transporter is regulated by sgk1 is insufficient to determine that sgk1 is involved in metabolic disorders. The link between the regulation of sodium glucose transporter by sgk1 and how it can be used for the diagnosis of obesity has not been disclosed in the specification.

(ii). At page 11 of the response, Applicants argue that specification further provides express written description of the molecules (i.e., oligonucleotides and/or antibodies) which can be used for characterizing metabolic disorders which are associated with sgk1 activity, in particular, mutations and/or polymorphisms in sgk1 which result in altered glucose uptake. To this end, the disclosure contained in page 6, lines 15-21 is directed to the use of antibody molecules. Antibody molecules directed to phosphorylated and/or unphosphorylated sgk1 consensus sequences are also described. Insofar as the structures (for example, amino acid sequences) of the claimed sgk1 species were known in the art, antibodies directed thereto are also adequately described. As for the consensus sequence in the sgk1 polypeptides, it is now well-settled that a specification need not disclose, and preferably omits, what is well known to those skilled in the art when an application is filed (for example, with respect to the sequence of sgk1 species and/or domains thereof).

Applicant's arguments have been fully considered but are not found persuasive because Applicants have not provided sufficient structural characteristics of the phosphorylated and/or unphosphorylated sequences of sgk1, the sgk1 consensus sequence, and the mutations in sgk1 that are expected to be used for the diagnosis of obesity. Although Applicant discloses the general information regarding the phosphorylated and/or unphosphorylated sequences of sgk1, sgk1 consensus sequences, mutations in sgk1, Applicant has not provided any specific information regarding the structural characteristics of the phosphorylated and/or unphosphorylated sequences of sgk1, the sgk1 consensus sequence, the mutations in sgk1 that are expected to be used for the diagnosis of obesity. For instance, the specification teaches that "consensus sequence" is to be understood as meaning the amino acid sequences which form the substrate site of the kinases, that is the site(s) of the phosphorylation (page 6, lines 18-21), the claims and specification fail to disclose any specific structural characteristics for the

sgk1 consensus sequence that can be used to diagnose obesity in the claimed method. In addition, the specification provides general teachings regarding the phosphorylated and/or unphosphorylated sequences of sgk1 and the mutations in sgk1, but the claims and specification fail to disclose any specific structural characteristics for the phosphorylated and/or unphosphorylated sequences of sgk1 and the mutations in sgk1 that can be used to diagnose obesity in the claimed method.

Based on Applicants' disclosure and knowledge within the art, those of skill in the art would conclude that Applicants would not have been in possession of the claimed genera encompassing a large number of phosphorylated and/or unphosphorylated sequences of Sgk1, Sgk1 consensus sequences, and mutations in Sgk1 that would be expected to be used for the diagnosis of obesity. Thus, applicant was not in possession of the claimed genera and the written description requirement is not satisfied.

Claim Rejections - 35 USC § 112 (Enablement)

Claims 53, 55-56, 59-60, and 62 remain rejected under 35 U.S.C. 112, First paragraph and the newly added claims 105-108 are also rejected under 35 U.S.C. 112, First paragraph, as failing to comply with the enablement requirement in view the amendments filed 02/11/2008. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

(i). At page 12 of the response, Applicants argues that specification provides an enabling disclosure that over-expression of sgk1 causes a significant stimulation of the sglt1-activity. See, the disclosure contained in Figs. 1 and 2 and the description thereof in the paragraphs

bridging pages 15 and 16 of the originally-filed specification. Further, from the descriptive portion of the specification and the art knowledge pertaining to the role of sglt1 in obesity, the instant disclosure teaches that sgk1 results in direct regulation of the activity of sglt1 Sodium dependent glucose transporters (sglt) have a defined role in predisposition of metabolic disorders such as obesity. The Examiner is cordially requested to review the enclosed publication by Fujita et al. (Dibetologia, 1998). In conclusion, Fujita teaches that sglt1 mRNA expression and activity thereof is significantly increased in "fatty rats.

Applicant's arguments have been fully considered but are not found persuasive. The Examiner agrees with Applicants that the specification provides an enabling disclosure that over-expression of sgk1 causes a significant stimulation of the sglt1-activity as evidenced by Figures 1 and 2 and pages 15 and 16. However, the Examiner has determined that the specification and the reference by Fujita et al. does not provide any evidence that Sgk1 can be used to diagnose obesity. Although the specification discloses that sgk1 results in the regulation of the activity of sglt1, the specification does not provide any evidence for the nexus between the regulation of sglt1 by sgk1 and obesity. It is unclear how one of skill in the art can use the regulation of the glucose transporter sglt1 with sgk1 *in vitro* affects obesity.

In addition, the reference by Fujita et al. discloses that intestinal glucose absorption through sglt1 was increased and was accompanied by intestinal epithelial hypertrophy and increased intestinal epithelial sglt1 mRNA content in 6-week-old OLETF rats (page 1465, left column, last paragraph). Moreover, Fujita et al. conclude that increased intestinal glucose absorption is associated with postprandial hyperglycaemia before the onset of insulin resistance and hyperinsulinaemia in these obese Type II diabetic rats (page 1465, left column, last paragraph). Based on these teachings, the reference by Fujita et al. disclose an association between glucose absorption and hyperlinsulinaemia in Type II diabetic rats, but the reference

does not provide any evidence or allude to the role of sglt1 in obesity. Since sglt1 is not linked to obesity, the regulation sglt-1 by sgk1 cannot be used to diagnose obesity.

(ii). At page 12 of the response, Applicants argue that the instant specification provides an enabling disclosure on the effect of sgk1 on sglt1 activity. See, the disclosure contained in the Examples. Mutations in the sgk1 polypeptides which modulate the activity of sglt1 (for example, sodium/glucose conductance) are clearly disclosed. The specification also provides a disclosure on the genetic polymorphisms in sgk1 gene and its implications on the human body weight. The disclosure strongly corroborates the findings by Dieter et al. (Obesity Research, 2004), which demonstrate that the sgk1 polypeptide of the instant invention strongly regulates sglt1 activity. Therefore, the specification's teaching that the level of sgk1 (for example, a patient sample) as a valuable marker for the diagnosis of obesity is clearly credible as required.

Applicant's arguments have been fully considered but are not found persuasive. As previously disclosed, the Examiner agrees with Applicants that the instant specification provides an enabling disclosure on the effect of sgk1 on sglt1 activity. However, the reference by Dieter et al. (2004) does not provide any supporting evidence to enable a method of diagnosing obesity with the detection of sgk1 with antibody. The reference by Dieter et al. (2004) discloses experimental evidence for the regulation of the glucose transporter sglt1 by sgk1 in cultured *Xenopus oocytes* (abstract, page 862) but does not provide any evidence that sgk1 can be used in a method to diagnose obesity in a patient. Although Dieter et al. (2004) conclude that excessive activity of sgk1 may contribute to the development of obesity (page 868, left column, last paragraph), Dieter et al. also recite that the link between sgk1, sglt1, and gain of body weight remains a matter of speculation (page 868, left column, end of 1st full paragraph). In addition, the reference by Dieter et al. does not provide any experimental evidence for the

nexus of sgk1 and obesity in patient. Based on the teachings of Dieter et al., the claimed method for the diagnosis of obesity is not enabled based on the unpredictability of the link between sgk1, sglt1, and gain of body weight and lack of *in vivo* experimental evidence.

(iii). At page 12 of the response, Applicants argue that the specification provides further disclosure on the use of antibody molecules and assay techniques utilizing such molecules for the study of sgk1 expression. Such antibody molecules were known in the art prior to the filing date of the instant application. Other examples of immuno-assays that can be routinely employed, for example, ELISA are also disclosed.

Applicant's arguments have been fully considered and are found persuasive regarding the use of antibody molecules and assay techniques utilizing such molecules for the study of sgk1 expression. However, Applicants have not satisfied the enablement requirement for the claimed invention because Applicants have not provided any evidence regarding the nexus between the regulation of sglt1 by sgk1 and obesity. Once the nexus has been established immuno-assays can be routinely used to diagnose obesity.

(iv). At page 13 of the response, Applicants argue that the disclosure by Vallon et al. (Current Opinion in Nephrology and Hypertension, 2005) does not disprove the role of sgk1 in sglt1 regulation. In addition, the publications by Palamada and Jayaraj do not disprove a role of sgk1 in obesity, as instantly claimed, but rather support it. The papers mainly points to a role of sgk1 in regulating the expression of glucose transporters. Palamada relates to the expression of glucose transporter isoform 1 (glut1) while Jayaraj is directed to the isoform 4 (glut4). Thus, the cited publications are directed to a role of sgk1 in the regulation of membrane-bound transporters glut1 and glut4, respectively. The authors merely state that the functional effect of

glut1 and glut4 up-regulation by sgk1 remains to be investigated. This does not mean that the scope of the instant claims is non-enabled.

Applicant's arguments have been fully considered but are not found persuasive. While the reference by Vallon et al. does not disprove the role of sgk1 in sglt1 regulation, the reference indicates that role of sgk1 in diseases involving glucose transport is unpredictable and requires further studies. In addition, the references by Palamada and Jayaraj provide experimental evidence that Sgk1 can regulate several glucose transporters including glut1 and glut4. They indicate that sgk1 targets several glucose transporters including sglt1, glut1, and glut4. However, these references do not support a role of sgk1 in obesity because they do not provide any evidence linking the regulation of glucose transporters by sgk1 with the diagnosis of obesity. Overall, these references indicate that the claimed method of diagnosing obesity is not enabled because the state of the art for sgk1 in diseases that include obesity has been not established at this present time.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IAN DANG whose telephone number is (571)272-5014. The examiner can normally be reached on Monday-Friday from 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manjunath Rao can be reached on (571) 272-0939. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ian Dang
Patent Examiner
Art Unit 1647
May 8, 2008

/Robert Landsman/
Primary Examiner, Art Unit 1647